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EXAMINER
ADAMS, CHARLES D

ART UNIT	PAPER NUMBER
2164	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _14 June 2007_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-17_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-17_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

SAM RIMELL
PRIMARY EXAMINER

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Remarks

1.   In response to communications filed on 14 June 2004, claims 1, 6, 10, and 14

are amended. Claims 1-17 are pending in the application.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Sicola et al. (US Pre-Grant Publication 2004/0064639) in view of Mashayekhi et al. (US

Patent 6,922,791).

As to claim 1, Sicola et al. teaches:

A data transfer server (see paragraphs [0049] and [0054]);

A software agent, designated as a primary software agent, in communication with

at least one of the two data storage systems and the data transfer server, the agent

configured for performing data transfer operations in response to commands from the

data transfer server (see paragraphs [0049], "storage array controllers", [0058], "remote

copy set operation", and [0050], which teaches 'host' and 'disaster-tolerant' paths);

One or more failover software agents in communication with the primary software agent, the data transfer server, and at least one of the two data storage systems, the failover software agents being remote from the primary software agent (see paragraphs [0049]-[0051] and Figure 2. All storage subsystems and all hosts are visible to each other over the SAN. Therefore, as they are connected by various network components, they are remote),

Sicola et al. does not explicitly teach wherein said primary software agent further represents a failover software agent for another primary software agent in another one of said data storage systems;

Mashayekhi et al. teaches wherein said primary software agent further represents a failover software agent for another primary software agent in another one of said data storage systems (see Mashayekhi et al. 6:25-38 and 1:58-16, and 7:42-51 and Figure 2a. There are multiple ways listed in Mashayekhi et al. which provide for a primary software agent serving as a failover agent for another primary agent);

Sicola et al. as modified teaches:

A failover protocol for determining an order which said software agents, within a communication path of the data transfer, are designated to take over the data transfer operation in response to one or more data transfer commands when a failure of one or more of said software agents is determined (see Mashaykhi et al. 6:25-38 and 1:58-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Sicola et al. by the teaching of Mashayekhi et al., since Mashayekhi et al. teaches that "the implementation of a failover

policy can be crucial when considering the overall high availability of a cluster" (see

1:28-30).

As to claim 2, Sicola et al. as modified teaches wherein the data transfer

operation is a replication of data within the data storage environment (see Sicola et al.

paragraph [0058]).

As to claim 3, Sicola et al. as modified teaches wherein server commands to the

software agents are sent over a network in accordance with an IP protocol (see Sicola

et al. paragraph [0053]).

As to claim 4, Sicola et al. as modified teaches wherein the software agents

communicate with the at least one data storage system over the network in accordance

with a Fibre Channel protocol (see Sicola et al. paragraph [0052]).

As to claim 5, Sicola et al. as modified teaches wherein a predetermined

hierarchal relationship is followed by the data transfer server to select the order in which

the failover software agents are commanded to take over the work of the one or more

determined failed software agents (see Mashayekhi et al. 6:25-38 and 1:58-16, and

7:42-51).

As to claim 6, Sicola et al. teaches:

A data replication management server (see paragraphs [0049] and [0054]);

A software agent, designated as primary software agent, in communication with at least one of the two data storage systems and the data replication management server, the primary software agent configured for performing data replication operations in response to commands from the data replication management server (see paragraphs [0049]-[0050] and paragraph [0058]);

One or more failover software agents in communication with the primary software agent, the data replication management server, and at least one of the two data storage systems, the failover software agents being remote from the primary software agent (see paragraphs [0049]-[0051] and Figure 2)

Sicola et al. does not explicitly teach wherein said primary software agent further represents a failover software agent for another primary software agent in another one of said data storage systems;

Mashayekhi et al. teaches wherein said primary software agent further represents a failover software agent for another primary software agent in another one of said data storage systems (see Mashayekhi et al. 6:25-38 and 1:58-16, and 7:42-51 and Figure 2a);

Sicola et al. as modified teaches a failover protocol for determining an order in which said software agents, within a communication path of the data transfer (see Sicola et al. paragraphs [0049]-[0052] and Figure 2), are designated to take over the data transfer operation in response to one or more data transfer commands when a

failure of one or more of said software agents is determined (see Mashayekhi et al.

6:25-38 and 1:58-16, and 7:42-51).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to have modified Sicola et al. by the teaching of

Mashayekhi et al., since Mashayekhi et al. teaches that "the implementation of a failover

policy can be crucial when considering the overall high availability of a cluster" (see

1:28-30).

As to claim 7, Sicola et al. as modified teaches wherein server commands to the

software agents are sent over a network in accordance with an IP protocol (see

paragraph [0053]. An "Internet Link" would inherently use an "IP protocol").

As to claim 8, Sicola et al. as modified teaches wherein the software agents

communicate with the at least one data storage system over the network in accordance

with a Fibre Channel protocol (see paragraph [0052]).

As to claim 9, Sicola et al. as modified teaches wherein the data replication

management server uses a predetermined hierarchal relationship to select the order in

which designated ones of the failover software agents are commanded to take over the

work of the one or more determined failed software agents (see Mashayekhi et al. 6:25-

38 and 1:58-16, and 7:42-51).

As to claim 10, <u>Sicola et al</u>. teaches a method for managing fault-tolerant

resources for replication of data stored in a data storage environment including at least

two data storage systems, and wherein data is replicated (see paragraph [0058]) from

one of the at least two data storage systems to at least one other data storage system

of the at least two data storage systems (see paragraph [0049]), and at least one

software agent in communication with at least one data replication management server

for managing the fault tolerant resources (see paragraph [0049]), the method

comprising:

configuring one or more software agents as failover agents that are in remote

communication with another software agent, designated as primary software agent,

which is also in communication with the data replication management server, and at

least one of the two data storage systems (see paragraphs [0049]-[0051] and [0058])

<u>Sicola et al</u>. does not teach wherein said primary software agent further

represents a failover software agent for another primary software agent in another one

of said data storage systems;

<u>Mashayekhi et al</u>. teaches wherein said primary software agent further

represents a failover software agent for another primary software agent in another one

of said data storage systems (see <u>Mashayekhi et al</u>. 6:25-38 and 1:58-16, and 7:42-51

and Figure 2a);

<u>Sicola et al</u>. as modified teaches establishing a failover protocol for determining

an order in which said software agents, within a communication path of the data transfer

(see <u>Sicola et al</u>. paragraphs [0049]-[0052] and Figure 2), are designated to take over

the data transfer operation in response to one or more data transfer commands when a

failure of one or more of said software agents is determined (see Mashayekhi et al.

6:25-38 and 1:58-16, and 7:42-51).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to have modified Sicola et al. by the teaching of

Mashayekhi et al., since Mashayekhi et al. teaches that "the implementation of a failover

policy can be crucial when considering the overall high availability of a cluster" (see

1:28-30).

As to claim 11, Sicola et al. as modified teaches wherein server commands to the

software agents are sent over a network in accordance with an IP protocol (see

paragraph [0053]).

As to claim 12, Sicola et al. teaches wherein the software agents communicate

with the at least one data storage system over the network in accordance with a Fibre

Channel protocol (see paragraph [0052]).

As to claim 13, Sicola et al. as modified teaches wherein the data replication

management server uses a predetermined hierarchal relationship to select the order in

which designated ones of the failover software agents is commanded to take over the

work of the one or more determined failed software agents (see Mashayekhi et al. 6:25-

38 and 1:58-16, and 7:42-51).

As to claim 14, <u>Sicola et al</u>. as modified teaches:

A data replication management server (see paragraphs [0049] and [0054]);

A software agent, designated as primary software agent, in communication with

at least one of the two data storage systems and the data replication management

server, the primary software agent configured for performing data replication operations

in response to commands from the data replication management server (see

paragraphs [0049]-[0050] and [0058]);

One or more failover software agents in communication with the primary software

agent, the data replication management server, and at least one of the two data storage

systems, the failover software agents being remote from the primary software agent

(see paragraphs [0049]-[0051] and Figure 2);

<u>Sicola et al</u>. does not explicitly teach wherein said primary software agent further

represents a failover software agent for another primary software agent in another one

of said data storage systems;

<u>Mashayekhi et al</u>. teaches wherein said primary software agent further

represents a failover software agent for another primary software agent in another one

of said data storage systems (see <u>Mashayekhi et al</u>. 6:25-38 and 1:58-16, and 7:42-51

and Figure 2a);

<u>Sicola et al</u>. as modified teaches a computer-executable program for carrying out

a failover protocol for determining an order in which said software agents, within a

communication path of the data transfer (see <u>Sicola et al</u>. paragraphs [0049]-[0052] and

Figure 2), are designated to take over the data transfer operation in response to one or

more data transfer commands when a failure of one or more of said software agents is

determined (see Mashayekhi et al. 6:25-38 and 1:58-16, and 7:42-51).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to have modified Sicola et al. by the teaching of

Mashayekhi et al., since Mashayekhi et al. teaches that "the implementation of a failover

policy can be crucial when considering the overall high availability of a cluster" (see

1:28-30).

As to claim 15, Sicola et al. as modified teaches wherein server commands to the

software agents are sent over a network in accordance with an IP protocol (see

paragraph [0053]. An "Internet Link" would inherently use an "IP protocol").

As to claim 16, Sicola et al. as modified teaches wherein the software agents

communicate with the at least one data storage system over the network in accordance

with a Fibre Channel protocol (see paragraph [0052]).

As to claim 17, Sicola et al. as modified teaches wherein the data replication

management server uses a predetermined hierarchal relationship to select the order in

which designated ones of the failover software agents are commanded to take over the

work of the one or more determined failed software agents (see Mashayekhi et al. 6:25-

38 and 1:58-16, and 7:42-51).

Response to Arguments

4.   Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Adams whose telephone number is (571) 272-3938. The examiner can normally be reached on 8:30 AM - 5:00 PM, M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Charles Adams
AU2164

SAM RIMELL
PRIMARY EXAMINER